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EXAMINER	
MOORE, IAN N	

ART UNIT	PAPER NUMBER
2661	

DATE MAILED: 06/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/872,141	KATUKAM ET AL.	
	Examiner	Art Unit	
	Ian N. Moore	2661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 April 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21,23-33 and 35-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21,23-33 and 35-42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 April 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4/1/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. An objection to the drawing is withdrawn since it is being amended accordingly.

2. Claim objections, on claims 1,16 and 20 are withdrawn since they are being amended accordingly.

3. The indicated allowability of claims 8,9,14,15,18-20, 25-27,37 and 38 are withdrawn.

Claim Objections

4. Claim 6, 21 and 30 are objected to because of the following informalities:

Claim 6 recites, "...the **first segment** being associated with **the first segment** being included..." in line 3-4. It is suggested to clarity the bold limitation.

Claim 21 recites, "includew" in line 7. It is suggested to correct the typographical error.

Claim 30 recites, "**a second segment**....the first link is included in the second segment", and claim 29, a claim which claim 30 depends, recites, "...the first segment includes...the first link when the first element is the first link..." It is suggested to modify to differentiate "**a** second segment" recites in claim 30 since this "new" or "another" type of "a" second segment contains "a first link" which originally belongs to the first segment.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-7,10-13,16, 17 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Finn (US 6,728,205).

Regarding Claim 1, Finn discloses a device (see FIG. 1, Network Node 12a) for creating a path (see FIG. 2, a path 34 or 36, see col. 18, lines 12-16; or see FIG. 4A, a path 92, see col. 22, lines 54-58) between a first element (see FIG. 2, Source node 30a, see col. 18, lines 15-17; or FIG. 4A, Source Node N1, see col. 22, lines 34-36) and a second element (see FIG. 2, Destination Node 30b, col. 18, lines 1-5; or FIG. 4A, Destination Node D1, col. 22, lines 35-37), the path being arranged to include a third element (see FIG. 2, Node 30i or 30c, col. 18, lines 4-10; or see FIG. 4A, N4, col. 22, lines 35-45) and a forth element (see FIG. 2, node 30h, 30c, or 30d), wherein the first element, the second element, the third element, and the fourth element are included in an optical network (see FIG. 1, network 10; see col. 8, lines 8-14; see col. 28, lines 63-67; SONET/SDH optical network), the device comprising:

a processor (see FIG. 1, a combined system of APS processor 14 and protection switching module 18; see col. 15, lines 15-20, 36-43); and

a storage device (see FIG. 1, Network Node 12a comprises a memory which stores the method to be executed), the storage device being arranged to store computer code (see col. 16, lines 36-47; network node comprises a memory to store computer/software instructions) for implementing a first mechanism (see FIG. 3, steps 58, 60; identifying/assigning and constructing a path) which causes the third element to be identified (see col. 20, lines 14-45; identifies/assigns node(s) in the path),

the storage device further being arranged to store computer code (see col. 16, lines 36-47; computer/software instructions) for implementing a second mechanism which causes the path between the first element and the second element to be computed such that the path traverses the third element (see FIG. 3, step 66 and 68; see col. 21, lines 4-40; computes and selects a path in between source and destination nodes in a first cycle of path via intermediate/upstream/downstream node(s)) in a first segment of the path computed (see FIG. 2, arc 36a-b) while the fourth element is blocked from being included in the first segment (see col. 21, lines 50-59; see col. 22, lines 5-9; and FIG. 3A,66,72; node 30h, 30c, or 30d are not included (i.e. blocked) in the arc 36a) and

such that the path traverses the fourth element in a second segment of the path computed (see FIG. 2, arc 36c and/or 36e) while the third element is blocked from being included in the second segment (FIG. 3 steps 66,68, 72 and 76; see col. 21, lines 50-59; see col. 22, lines 5-9; see col. 18, lines 10-26; Node 30i is not included (i.e. block) in arc 36c, 36e),

wherein the processor processes the computer codes (see col. 16, lines 36-47; the combined processor processes the computer/software instructions).

Regarding Claim 2, Finn discloses wherein the first element (see FIG. 2, Source node 30a, see col. 18, lines 15-17; or FIG. 4A, Source Node N1, see col. 22, lines 34-36) and the second element (see FIG. 2, Destination Node 30b, col. 18, lines 1-5; or FIG. 4A, Destination Node D1, col. 22, lines 35-37), and the third element are nodes (see FIG. 2, Node 30c or 30i, see col. 18, lines 4-10; or see FIG. 4A, N4, col. 22, lines 35-45).

Regarding Claim 3, Finn discloses wherein the first element (see FIG. 2, Source node 30a, see col. 18, lines 15-17; or FIG. 4A, Source Node N1, see col. 22, lines 34-36) and the second element are nodes (see FIG. 2, Destination Node 30b, col. 18, lines 1-5; or FIG. 4A, Destination Node D1, col. 22, lines 35-37), and the third element is a link (see FIG. 2, an arc 36a or 34a, col. 18, lines 4-10; or see FIG. 4A, a path 92a, col. 22, lines 54-64).

Regarding Claim 4, Finn discloses wherein the first mechanism/means is arranged to identify the third element as being a component of the path (see FIG. 2, node 30c or 30i is part of the path, col. 18, lines 15-25; or see FIG. 4A, node N4 is part of the path 92; see col. 22, lines 34-55).

Regarding Claim 5, Finn discloses wherein the first mechanism is further arranged to identify a fourth element (see FIG. 3A, step 70, 72; see col. 21, lines 50-56; a node not covered by the fist path, i.e., see FIG. 2, node 30h, 30c, or 30d) as being a component of the path (see FIG. 2, node 30 h, 30c, or 30d is a part of the

path 36), the fourth element being arranged to be traversed after the third element is traversed (see FIG. 2, node 30 h, 30c, or 30d is traversed after node 30i is traversed; see col. 18, lines 13-25).

Regarding Claim 6, Finn discloses wherein the path (see FIG. 2, path 36) includes a plurality of segments (see FIG. 2, arc 36a-36i), and wherein the second mechanism is further arranged to compute a first segment (see FIG. 2, arc 36a) associated with the first element (see FIG. 2, source node 36a utilizes arc 36a) the first segment being included in the plurality of segments (see FIG. 2, arc 36a is included in arcs 36a-36i; see col. 18, lines 1-10, 45-50).

Regarding Claim 7, Finn discloses implementing a third mechanism (see FIG. 3A, step 70 and 72) which causes the fourth element (see FIG. 2, node 30h, 30c, or 30d) and the second element (see FIG. 2, destination node 30b) to be substantially prevented from being included as a part of the first segment (see FIG. 2, arc 36a; see col. 21, lines 50-59; see col. 22, lines 5-9; a next path (see FIG. 3A, step 72) includes nodes that are not already include in a first path (see FIG. 3A, step 66). Thus, destination node 30b and node 30h, 30c, or 30d are not included in the arc).

Regarding Claim 10, Finn discloses an apparatus (see FIG. 1, Network Node 12a) for creating a path (see FIG. 2, a path 34 or 36, see col. 18, lines 12-16; or see FIG. 4A, a path 92, see col. 22, lines 54-58) between a first element (see FIG. 2, Source node 30a, see col. 18, lines 15-17; or FIG. 4A, Source Node N1, see col. 22, lines 34-36) and a second element (see FIG. 2, Destination Node 30b, or FIG.

4A, Destination Node D1) in an optical network (see FIG. 1, network 10; see col. 8, lines 8-14; see col. 28, lines 63-67; SONET/SDH optical network), the path being arranged to include a third element (see FIG. 2, Node 30c or 30i; or see FIG. 4A, N4) and a forth element (see FIG. 2, node 30h, 30c, or 30d), the apparatus comprising:

a first means (see FIG. 1, a combined system of APS processor 14 and protection switching module 18; see col. 15, lines 15-20, 36-43; see FIG. 3, steps 58, 60; identifying/assigning and constructing a path) for identifying the third element (see col. 20, lines 14-45; identifies/assigns node(s) in the path); and

a second means (see FIG. 1, a combined system of APS processor 14 and protection switching module 18; see col. 15, lines 15-20, 36-43; see FIG. 3, step 66 and 68) for computing a path between the first element and the second element such that the path traverses the third element (see col. 21, lines 4-40; computes and selects a path in between source and destination nodes in a first cycle of path via intermediate/upstream/downstream node(s)) in a first segment of the path computed (see FIG. 2, arc 36a) while the fourth element is blocked from being included in the first segment (see col. 21, lines 50-59; see col. 22, lines 5-9; and FIG. 3A,66,72; node 30h, 30c, or 30d are not included (i.e. blocked) in the arc 36a) and

such that the path traverses the fourth element in a second segment of the path computed (see FIG. 2, arc 36c,36e or 36h) while the third element is blocked from being included in the second segment (FIG. 3,66,68, 72 and 76; see col. 21,

lines 50-59; see col. 22, lines 5-9; see col. 18, lines 10-26; Node 30i or 30c is not included (i.e. block) in arc 36c, 36e, or 36h).

Regarding Claim 11, an apparatus claim which that substantially discloses all the limitations of the respective method claim 4. Therefore, it is subjected to the same rejections.

Regarding Claim 12, an apparatus claim which that substantially discloses all the limitations of the respective method claim 5. Therefore, it is subjected to the same rejections.

Regarding Claim 13, an apparatus claim which that substantially discloses all the limitations of the respective method claim 6. Therefore, it is subjected to the same rejections.

Regarding Claim 16; Finn discloses an apparatus (see FIG. 1, Network Node 12a) for routing a path (see FIG. 2, a path 34 or 36, see col. 18, lines 12-16; or see FIG. 4A, a path 92, see col. 22, lines 54-58) between a source node (see FIG. 2, Source node 30a, see col. 18, lines 15-17; or FIG. 4A, Source Node N1, see col. 22, lines 34-36) and a destination node (see FIG. 2, Destination Node 30b, or FIG. 4A, Destination Node D1) included within a network (see FIG. 1, network 10; see col. 8, lines 8-14; see col. 28, lines 63-67; SONET/SDH optical network), the network further including a plurality of elements (see FIG. 2, arcs 36a-36h and 34a-h), the apparatus comprising:

an identifier (see FIG. 12a, protection switching module 18 and APS processor 14 performs the identifying/assign step, see FIG. 3, steps 58, 60;

identifying/assigning step) for identifying a set of elements (see FIG. 2, Node 30c,30d,30h, 30i and its arcs 36a-b, 36c-36e, 36h; or see FIG. 4A, N4) to be included in the path (see col. 20, lines 14-45; identifies/assigns node(s) and its associated arcs in the path between source and destination nodes), the set of network elements (see FIG. 2, Node 30c,30d,30h, 30i and its arcs 36a-b, 36c-36e, 36h; or see FIG. 4A, N4) being included in the plurality of network elements (see FIG. 2, nodes 30s and their arcs 36a-36h and 34a-h);

a blocker (see FIG. 12a, protection switching module 18 and routing table 16 performs step of not including the intermediate node(s) and their arcs initially (i.e. blocking), see FIG. 3A, step 68,70; see col. 21, lines 30-56) for blocking at least a first element (see FIG. 3A, the first path/arc (i.e. arc 36a)) included in the set of elements from being used in generating a first segment of the path (see FIG. 2, arcs 36 a-b); see col. 21, lines 30-56; not including arc 36a in the first segment of the path 36a-b, thereby, forming arc 36b), and for blocking at lease a second element (see FIG. 2, arc 36c) included in the set of elements from being used in generating a second segment of the path (see FIG. 2, arcs 36c,e,h; see col. 18, lines 1-36; see col. 21, lines 30-56; not including arc 36c in the second segment of the path arc 36c,e,h, thereby, forming arc 36e,h); and

a path router (see FIG. 12a, protection switching module 18 performs the step of switching and routing, per FIG. 3, step 66 and 68; see col. 21, lines 4-40; assigning, selecting and routing over a arc between source and intermediate/upstream/downstream node(s)), the path router being arranged to

generate the first segment such that the first segment includes the source node (see FIG. 2, node 30a) and the second element (see FIG. 2, arc 36c), wherein the first segment does not include the first element (see FIG. 2, arc 36a-b does not include arc 36a with previously block/not include 36c (i.e. second element), thereby, forming first segment of 36b,36c), the path router further being arranged to generate the second segment such that the second segment includes the first element (see FIG. 2, a second segment includes the previously blocked/not-included arc 36a and 36e and 36h).

Regarding Claim 17, Finn discloses wherein the blocker blocks substantially all elements included in the set of elements except for the second element (see FIG. 2, arc 36c) from being used in generating the first segment of the path (see FIG. 3A, step 68,70; see col. 21, lines 30-56; all nodes and its associated arcs which are already included in the first path are not used expected, thereby, using the remaining intermediate nodes and its associated arcs (i.e. arc 36c) which are included in the path).

Regarding Claim 20, Finn discloses the blocker is further arranged to block the source node (see FIG. 2, node 30a) from being included in the second segment (see FIG. 2, node 30a does not included in arc 36c,e,h).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 8,9,14,15,18,19,21,23-33, and 35-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Finn in view of Doshi (US006073248A).

Regarding Claim 8, Finn discloses a device (see FIG. 1, Network Node 12a) for creating a path (see FIG. 2, a path 34 or 36, see col. 18, lines 12-16; or see FIG. 4A, a path 92, see col. 22, lines 54-58) between a first element (see FIG. 2, Source node 30a, see col. 18, lines 15-17; or FIG. 4A, Source Node N1, see col. 22, lines 34-36) and a second element (see FIG. 2, Destination Node 30b, col. 18, lines 1-5; or FIG. 4A, Destination Node D1, col. 22, lines 35-37), the path being arranged to include a third element (see FIG. 2, Node 30i or 30c, col. 18, lines 4-10; or see FIG. 4A, N4, col. 22, lines 35-45) and a forth element (see FIG. 2, node 30h, 30c, or 30d), wherein the first element, the second element, the third element, and the fourth element are included in an optical network (see FIG. 1, network 10; see col. 8, lines 8-14; see col. 28, lines 63-67; SONET/SDH optical network), the device comprising:

a processor (see FIG. 1, a combined system of APS processor 14 and protection switching module 18; see col. 15, lines 15-20, 36-43); and

a storage device (see FIG. 1, Network Node 12a comprises a memory which stores the method to be executed), the storage device being arranged to store computer code (see col. 16, lines 36-47; network node comprises a memory to store computer/software instructions) for implementing a first mechanism (see FIG. 3, steps 58, 60; identifying/assigning and constructing a path) which causes the third

element to be identified (see col. 20, lines 14-45; identifies/assigns node(s) in the path),

the storage device further being arranged to store computer code (see col. 16, lines 36-47; computer/software instructions) for implementing a second mechanism which causes the path between the first element and the second element to be computed such that the path traverses the third element (see FIG. 3, step 66 and 68; see col. 21, lines 4-40; computes and selects a path in between source and destination nodes in a first cycle of path via intermediate/upstream/downstream node(s)) in a first segment of the path computed (see FIG. 2, arc 36a-b) while the fourth element is blocked from being included in the first segment (see col. 21, lines 50-59; see col. 22, lines 5-9; and FIG. 3A,66,72; node 30h, 30c, or 30d are not included (i.e. blocked) in the arc 36a) and

such that the path traverses the fourth element in a second segment of the path computed (see FIG. 2, arc 36c and/or 36e) while the third element is blocked from being included in the second segment (FIG. 3, steps 66,68, 72 and 76; see col. 21, lines 50-59; see col. 22, lines 5-9; see col. 18, lines 10-26; Node 30i is not included (i.e. block) in arc 36c or 36e),

wherein the processor processes the computer codes (see col. 16, lines 36-47; the combined processor processes the computer/software instructions);

the first mechanism/means is arranged to identify the third element as being a component of the path (see FIG. 2, node 30c or 30i is part of the path, col. 18, lines 15-25; or see FIG. 4A, node N4 is part of the path 92; see col. 22, lines 34-55); a

fourth element (see FIG. 3A, step 70, 72; see col. 21, lines 50-56; a node not covered by the fist path, i.e., see FIG. 2, node 30h, 30c, or 30d) as being a component of the path (see FIG. 2, node 30 h, 30c, or 30d is a part of the path 36), the fourth element being arranged to be traversed after the third element is traversed (see FIG. 2, node 30 h, 30c, or 30d is traversed after node 30i is traversed; see col. 18, lines 13-25);

the path (see FIG. 2, path 36) includes a plurality of segments (see FIG. 2, arc 36a-36i), and wherein the second mechanism is further arranged to compute a first segment (see FIG. 2, arc 36a-b) associated with the first element (see FIG. 2, source node 36a utilizes arc 36a) and the third element (see FIG. 2, intermediate node 30i utilizes arc 36b), the first segment being included in the plurality of segments (see FIG. 2, arc 36a-b is included in arcs 36a-36i; see col. 18, lines 1-10, 45-50).

implementing a third mechanism (see FIG. 3A, step 70 and 72) which causes the fourth element (see FIG. 2, node 30h, 30c, or 30d) and the second element (see FIG. 2, destination node 30b) to be substantially prevented from being included as a part of the first segment (see FIG. 2, arc 36a-b; see col. 21, lines 50-59; see col. 22, lines 5-9; see FIG. 3A, step 66 and 72; destination node 30b and node 30h, 30c, or 30d are not included in the arc a-b);

wherein a second segment (see FIG. 2, arc 36c and 36e) associated with the fourth element (see FIG. 2, node 30h,c or d), the second segment being included in

the plurality of segments (see FIG. 2, arc 36c and 36e is included in arcs 36a-36i; see col. 18, lines 1-10, 45-50), and

wherein the first element (see FIG. 2, source node 30a) and the second element (see FIG. 2,destionation node 30b) from being included as a part of the second segment (see FIG. 2, node 30a-b is not part of arc 36c and 36e).

Finn does not explicitly disclose further arranging and preventing. Doshi teaches the second and third mechanisms for further arranged to compute the segment/path and the mechanism is arranged to substantially prevent the segment/path/node (see FIG. 8, step 82,83-88 and 88, assigning the path, locking and unlocking the path; see col. 11, lines 40 to col. 12, lines 30). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide selecting shortest path and locking/blocking and releasing/unblocking the paths/nodes, as taught by Doshi in the system of Finn, so that it would improve network restoring techniques; see Doshi col. 5 line 53 to col. 6, lines 16.

Also, note that assigning and preventing path/segment/node does not define a patentable distinct invention over that in the system of Finn since both the invention as a whole and the system of Finn are directed to determining and computing for routing packet end-to-end. The degree in which determining how path/segment are created presents no new or unexpected results, so long as the end-to-end route is maintained. Therefore, to setup different segment/path/node for difficult variation would have been routine experimentation and optimization in the

absence of criticality. In addition, it is well known in the art of network management, where the system administrator assigning different routes/paths according to its specification or network requirement.

Regarding Claim 9, Finn discloses a third segment (see FIG. 2, arc 36h) associated with the second element (see FIG. 2, connects to node 30b), the third segment begin included in the plurality of segment (see FIG. 2, arcs 36a-i), and

wherein prevent the first element (see FIG. 2, node 30a) and third element (see FIG. 2, node 30i) from being included as a part of the third segment (see FIG. 2, nodes 30 and 30i is not part of the arc 36h). Doshi also teaches the second and third mechanisms for further arranged to compute the segment/path and the mechanism is arranged to substantially prevent the segment/path/node as described above in claim 8.

Regarding Claim 14, Finn discloses an apparatus (see FIG. 1, Network Node 12a) for creating a path (see FIG. 2, a path 34 or 36, see col. 18, lines 12-16; or see FIG. 4A, a path 92, see col. 22, lines 54-58) between a first element (see FIG. 2, Source node 30a, see col. 18, lines 15-17; or FIG. 4A, Source Node N1, see col. 22, lines 34-36) and a second element (see FIG. 2, Destination Node 30b, or FIG. 4A, Destination Node D1) in an optical network (see FIG. 1, network 10; see col. 8, lines 8-14; see col. 28, lines 63-67; SONET/SDH optical network), the path being arranged to include a third element (see FIG. 2, Node 30c or 30i; or see FIG. 4A, N4) and a forth element (see FIG. 2, node 30h, 30c, or 30d), the apparatus comprising:

a first means (see FIG. 1, a combined system of APS processor 14 and protection switching module 18; see col. 15, lines 15-20, 36-43; see FIG. 3, steps 58, 60; identifying/assigning and constructing a path) for identifying the third element (see col. 20, lines 14-45; identifies/assigns node(s) in the path); and

a second means (see FIG. 1, a combined system of APS processor 14 and protection switching module 18; see col. 15, lines 15-20, 36-43; see FIG. 3, step 66 and 68) for computing a path between the first element and the second element such that the path traverses the third element (see col. 21, lines 4-40; computes and selects a path in between source and destination nodes in a first cycle of path via intermediate/upstream/downstream node(s));

wherein the first mechanism/means is arranged to identify the third element as being a component of the path (see FIG. 2, node 30c or 30i is part of the path, col. 18, lines 15-25; or see FIG. 4A, node N4 is part of the path 92; see col. 22, lines 34-55);

identifies a fourth element (see FIG. 3A, step 70, 72; see col. 21, lines 50-56; a node not covered by the fist path, i.e., see FIG. 2, node 30h, 30c, or 30d) as being a component of the path (see FIG. 2, node 30 h, 30c, or 30d is a part of the path 36), the fourth element being arranged to be traversed after the third element is traversed (see FIG. 2, node 30 h, 30c, or 30d is traversed after node 30i is traversed; see col. 18, lines 13-25);

the path (see FIG. 2, path 36) includes a plurality of segments (see FIG. 2, arc 36a-36i), and wherein the second mechanism is further arranged to compute a

first segment (see FIG. 2, arc 36a-b) associated with the first element (see FIG. 2, source node 36a utilizes arc 36a) the first segment being included in the plurality of segments (see FIG. 2, arc 36a-b is included in arcs 36a-36i; see col. 18, lines 1-10, 45-50);

a third means (see FIG. 12a, protection switching module 18 performs the step of switching and routing, per FIG. 3, step 66 and 68; see col. 21, lines 4-40; assigning, selecting and routing over an arc between source and intermediate/upstream/downstream node(s)) which causes the fourth element (see FIG. 2, node 30h, 30c, or 30d) and the second element (see FIG. 2, destination node 30b) to be substantially prevented from being included as a part of the first segment (see FIG. 2, arc 36a-b; see col. 21, lines 50-59; see col. 22, lines 5-9; see FIG. 3A, step 66 and 72; destination node 30b and node 30h, 30c, or 30d are not included in the arc a-b);

wherein a second segment (see FIG. 2, arc 36c and 36e) associated with the fourth element (see FIG. 2, node 30h,c or d), the second segment being included in the plurality of segments (see FIG. 2, arc 36c and 36e is included in arcs 36a-36i; see col. 18, lines 1-10, 45-50), and

wherein the first element (see FIG. 2, source node 30a) and the second element (see FIG. 2,destionation node 30b) from being included as a part of the second segment (see FIG. 2, node 30a-b is not part of arc 36c and 36e).

Finn does not explicitly disclose further arranging and preventing. Doshi teaches the second and third mechanisms for further arranged to compute the

segment/path and the mechanism is arranged to substantially prevent the segment/path/node (see FIG. 8, step 82,83-88 and 88, assigning the path, locking and unlocking the path; see col. 11, lines 40 to col. 12, lines 30). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide selecting shortest path and locking/blocking and releasing/unblocking the paths/nodes, as taught by Doshi in the system of Finn, so that it would improve network restoring techniques; see Doshi col. 5 line 53 to col. 6, lines 16.

Also, note that assigning and preventing path/segment/node does not define a patentable distinct invention over that in the system of Finn since both the invention as a whole and the system of Finn are directed to determining and computing for routing packet end-to-end. The degree in which determining how path/segment are created presents no new or unexpected results, so long as the end-to-end route is maintained. Therefore, to setup different segment/path/node for difficult variation would have been routine experimentation and optimization in the absence of criticality. In addition, it is well known in the art of network management, where the system administrator assigning different routes/paths according to its specification or network requirement.

Regarding Claim 15, an apparatus claim which that substantially discloses all the limitations of the respective method claim 9. Therefore, it is subjected to the same rejections.

Regarding Claim 18, Finn discloses an apparatus (see FIG. 1, Network Node 12a) for routing a path (see FIG. 2, a path 34 or 36, see col. 18, lines 12-16; or see FIG. 4A, a path 92, see col. 22, lines 54-58) between a source node (see FIG. 2, Source node 30a, see col. 18, lines 15-17; or FIG. 4A, Source Node N1, see col. 22, lines 34-36) and a destination node (see FIG. 2, Destination Node 30b, or FIG. 4A, Destination Node D1) included within a network (see FIG. 1, network 10; see col. 8, lines 8-14; see col. 28, lines 63-67; SONET/SDH optical network), the network further including a plurality of elements (see FIG. 2, arcs 36a-36h and 34a-h), the apparatus comprising:

an identifier (see FIG. 12a, protection switching module 18 and APS processor 14 performs the identifying/assign step, see FIG. 3, steps 58, 60; identifying/assigning step) for identifying a set of elements (see FIG. 2, Node 30c, 30d, 30h, 30i and its arcs 36a-b, 36c-36e, 36h; or see FIG. 4A, N4) to be included in the path (see col. 20, lines 14-45; identifies/assigns node(s) and its associated arcs in the path between source and destination nodes), the set of network elements (see FIG. 2, Node 30c,30d,30h, 30i and its arcs 36a-b, 36c-36e, 36h; or see FIG. 4A, N4) being included in the plurality of network elements (see FIG. 2, nodes 30s and their arcs 36a-36h and 34a-h);

a blocker (see FIG. 12a, protection switching module 18 and routing table 16 performs step of not including the intermediate node(s) and their arcs initially (i.e. blocking), see FIG. 3A, step 68,70; see col. 21, lines 30-56) for blocking at least a first element (see FIG. 3A, the first path/arc (i.e. arc 36a)) included in the set of

elements from being used in generating a first segment of the path (see FIG. 2, arcs 36 a-b); see col. 21, lines 30-56; not including arc 36a in the first segment of the path 36a-b, thereby, forming arc 36b), and for blocking at lease a second element (see FIG. 2, arc 36c) included in the set of elements from being used in generating a second segment of the path (see FIG. 2, arcs 36c,e,h; see col. 18, lines 1-36; see col. 21, lines 30-56; not including arc 36c in the second segment of the path arc 36c,e,h, thereby, forming arc 36e,h);

wherein the blocker blocks substantially all elements included in the set of elements except for the second element (see FIG. 2, arc 36c) from being used in generating the first segment of the path (see FIG. 3A, step 68,70; see col. 21, lines 30-56; all nodes and its associated arcs which are already included in the first path are not used expected, thereby, using the remaining intermediate nodes and its associated arcs (i.e. arc 36c) which are included in the path)

a path router (see FIG. 12a, protection switching module 18 performs the step of switching and routing, per FIG. 3, step 66 and 68; see col. 21, lines 4-40; assigning, selecting and routing over an arc between source and intermediate/upstream/downstream node(s)), the path router being arranged to generate the first segment such that the first segment includes the source node (see FIG. 2, node 30a) and the second element (see FIG. 2, arc 36c), the second element being included in the set of element (see FIG. 2, 36a-i), wherein the first segment does not include the first element (see FIG. 2, arc 36a-b does not include

arc 36a with previously block/not include 36c (i.e. second element), thereby, forming first segment of 36b,36c),

the blocker is arranged to generate the second element after the first segment is generated (see FIG. 2, arc 36c is generated after the arc 36a-b is generated) and to block at least one element (see FIG. 2, block arc 36a-b) included in the plurality of elements from being included in a second segment of the path (see FIG. 2, arc 36a-b is not in the arcs 36c,e, h), the at least one element included in the plurality of elements being a component of the fist segment (see FIG. 2, arc 36a or 36b is a component of arcs 36a-b; see col. 21, lines 4-40; see col. 18, lines 1-51).

Finn does not explicitly disclose unblocking. However, Doshi teaches blocking and unblocking the path/links/nodes (see FIG. 8, step 83 and 88,locking and unlocking; see col. 11, lines 40 to col. 12, lines 30). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide selecting shortest path and locking/blocking and releasing/unblocking the paths/nodes, as taught by Doshi in the system of Finn, so that it would improve network restoring techniques; see Doshi col. 5 line 53 to col. 6, lines 16.

Regarding Claim 19, Finn discloses the path router is further arranged to generate the second segment (see FIG. 2, arc 36c) such that the second element is a part of is a component of the second segment (see FIG. 2, arc 36c is part of second segment arc 36c,e, h; see col. 21, lines 4-40; see col. 18, lines 1-51).

Regarding Claim 21, Finn discloses a method (see FIG. 3 and 3A, a method) for computing a circuit path (see FIG. 2, a path 34 or 36, see col. 18, lines 12-16; or

see FIG. 4A, a path 92, see col. 22, lines 54-58) between a source node (see FIG. 2, Source node 30a, see col. 18, lines 15-17; or FIG. 4A, Source Node N1, see col. 22, lines 34-36) and a destination node (see FIG. 2, Destination Node 30b, col. 18, lines 1-5; or FIG. 4A, Destination Node D1, col. 22, lines 35-37) of an optical network (see FIG. 1, network 10; see col. 8, lines 8-14; see col. 28, lines 63-67; SONET/SDH optical network), the method comprising:

identifying at least a first element (see FIG. 2, Node 30c, 30i, or link 36a; or see FIG. 4A, N4; see FIG. 3, steps 58, 60; identifying/assigning nodes) that is to be traversed by the circuit path between the source node and the destination node (see col. 20, lines 14-45; identifies/assigns node(s) in the path between source and destination nodes); and

routing a first segment automatically (see FIG. 2, arc 36a-b; or see FIG. 4A, arc 92a), the first element being a part of the circuit path (see FIG. 2, node 30c or 30i is part of the path 34 or 36; or see FIG. 4A, node N4 is part of the path 92), wherein when the first element is a node (see FIG. 2, node 30c; or see FIG. 4, Node N4), the source node (see FIG. 2, source node 30a; or see FIG. 4A, source node N1) and the first element are components of the first segment (see FIG. 2, node 30c or 30i is part of arc 34a or 36a path; or see FIG. 4A, node N4 is part of the arc 92a); see FIG. 3, step 66 and 68; see col. 21, lines 4-40; the method assigns, selects and routes over a arc between source and intermediate/upstream/downstream node(s) and wherein routing the first segment automatically using a short path first algorithm (see col. 22, lines 24-27).

Finn does not explicitly disclose shortest. However, Doshi teaches routing automatically using shortest path algorithm (see col. 12, lines 5-15; see col. 13, lines 1-19). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide selecting shortest path, as taught by Doshi in the system of Finn, so that it would improve network restoring techniques; see Doshi col. 5 line 53 to col. 6, lines 16.

Regarding Claim 23, Finn discloses identifying a second element (see FIG. 3A, step 70, 72; see col. 21, lines 50-56; a node or arc not covered by the fist path; a node i.e., see FIG. 2, node 30h, 30c, or 30d; or its associated arcs 36c,e, and/or h) that is to be traversed by the circuit path between the first element and the destination node (see FIG. 2, node 30 h, 30c, or 30d (or its associated arcs 36c,e, h) is traversed by the end path arcs 36b,c,e and h; see col. 18, lines 13-25); and

blocking the second element from being available for use in routing the first segment automatically (see FIG. 3A, step 68,70; see col. 21, lines 30-56; the first path/arc (i.e. arc 36a-b) does not automatically include an intermediate node (i.e. node 30h, 30c, or 30d) or its associated arcs (36c,e,h), thereby blocking/not-already-including the intermediate node), wherein routing the first segment automatically includes routing the first segment to substantially avoid including the second element as a component (see col. 21, lines 50-56; routing arc 36a-b from the source node 30a does not automatically include (i.e. avoid including) the intermediate node (i.e. node 30h,30c, or 30d; or, arcs 36c,e,h)).

Regarding Claim 24, Finn discloses blocking the destination node from being available for use in routing the first segment automatically (see FIG. 3A, step 68,70; see col. 21, lines 30-56; the first path/arc 36a-b does not automatically include the destination node (i.e. node 30b), thereby blocking/not-already-including the node), wherein routing the first segment automatically further includes routing the first segment to substantially avoid including the destination node as a component (see col. 21, lines 50-56; routing arc 36a-b from the source node 30a does not automatically include (i.e. avoid including) the destination node 30b).

Regarding Claim 25, Finn discloses a method (see FIG. 3 and 3A, a method) for computing a circuit path (see FIG. 2, a path 34 or 36, see col. 18, lines 12-16; or see FIG. 4A, a path 92, see col. 22, lines 54-58) between a source node (see FIG. 2, Source node 30a, see col. 18, lines 15-17; or FIG. 4A, Source Node N1, see col. 22, lines 34-36) and a destination node (see FIG. 2, Destination Node 30b, col. 18, lines 1-5; or FIG. 4A, Destination Node D1, col. 22, lines 35-37) of an optical network (see FIG. 1, network 10; see col. 8, lines 8-14; see col. 28, lines 63-67; SONET/SDH optical network), the method comprising:

identifying at least a first element (see FIG. 2, Node 30c, 30i, or arc 36a; or see FIG. 4A, N4; see FIG. 3, steps 58, 60; identifying/assigning nodes) that is to be traversed by the circuit path between the source node and the destination node (see col. 20, lines 14-45; identifies/assigns node(s) in the path between source and destination nodes); and

identifying a second element (see FIG. 3A, step 70, 72; see col. 21, lines 50-56; a node or arc not covered by the fist path; a node i.e., see FIG. 2, node 30h, 30c, or 30d; or its associated arcs 36c, 36e, or 36h) that is to be traversed by the circuit path between the first element and the destination node (see FIG. 2, node 30 h, 30c, or 30d (or its associated arcs) is traversed after node 30i (or arc 36a-b) is traversed; see col. 18, lines 13-25); and

blocking the second element from being available for use in routing a first segment automatically (see FIG. 3A, step 68,70; see col. 21, lines 30-56; the first path/arc (i.e. arc 36a-b); arc 36c, 36e, or 36h does not include in the arc 36a-b, thereby it is automatically blocked/not-already-included);

blocking the destination node from being available for use in routing the first segment automatically (see FIG. 3A, step 68,70; see col. 21, lines 30-56; the first path/arc (i.e. arc 36a-b) does not automatically include the destination node (i.e. node 30b), thereby blocking/not-already-including the node);

routing a first segment automatically (see FIG. 2, arc 36a-b; or see FIG. 4A, arc 92a), the first element being a part of the circuit path (see FIG. 2, node 30i or arc 36a is part of the first path 36a-b; or see FIG. 4A, node N4 is part of the path 92), wherein when the first element is a node (see FIG. 2, node 30i; or see FIG. 4, Node N4), the source node (see FIG. 2, source node 30a; or see FIG. 4A, source node N1) and the first element are components of the first segment (see FIG. 2, node 30i is part of arc 36a-b path; or see FIG. 4A, node N4 is part of the arc 92a); see FIG. 3, step 66 and 68; see col. 21, lines 4-40; the method assigns, selects and routes over

arc between source and intermediate/upstream/downstream node(s) and wherein routing the first segment automatically using a short path first algorithm (see col. 22, lines 24-27) to substantially avoid including the destination node as a component (see col. 21, lines 50-56; routing arc 36a from the source node 30a does not automatically include (i.e. avoid including) arc 36c,36e or 3h and the destination node 30b);

the second element such that the second element (see FIG. 2, arc 36c,e or h) is available for use in routing a second segment automatically (see FIG. 2, arc 36c,e, h), the second segment being a part of the circuit path (see FIG. 2, arc 36 c,e, h is part of the end to end circuit path between node 30a and 30b; see col. 21, lines 4-40; see col. 18, lines 1-51);

blocking the source node (see FIG. 2, node 30a) from being available for use in routing the second segment automatically (see FIG. 2, arc 36 c, e, h are not include the source node 30a; see col. 21, lines 4-40; see col. 18, lines 1-51); and

routing the second segment automatically, wherein the second element (see FIG. 2, 36c,e, or h) is a component of the second segment and the source node is not a component of the second segment (see FIG. 2, source node is not part of arc 36c,e, and h; see col. 21, lines 4-40; see col. 18, lines 1-51).

Finn does not explicitly disclose shortest and unblocking. However, Doshi teaches routing automatically using shortest path algorithm (see col. 12, lines 5-15; see col. 13, lines 1-19) and blocking and unblocking the path/links/nodes (see FIG. 8, step 83 and 88,locking and unlocking; see col. 11, lines 40 to col. 12, lines 30).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide selecting shortest path and locking/blocking and releasing/unblocking the paths/nodes, as taught by Doshi in the system of Finn, so that it would improve network restoring techniques; see Doshi col. 5 line 53 to col. 6, lines 16.

Regarding Claim 26, Finn discloses blocking substantially all components of the first segment (see FIG. 2, arc 36a,b) from being available for use in routing the second segment automatically (see FIG. 2, arcs 36c,e, h; first segment arc 36a-b does not include the second segment 36c,e, h; see col. 21, lines 4-40; see col. 18, lines 1-51).

Regarding Claim 27, Finn discloses wherein a terminus of the first segments (see FIG. 2, terminating/end of arc 36b or node 30h) is a beginning of the second segment (see FIG. 2, beginning of arc 36c), and the terminus of the first segment is not blocked from begin available for use in routing the second segment automatically (see FIG. 2, terminating/end of arc 36b or node 30h is available for use routing of arc 36e; see col. 21, lines 4-40; see col. 18, lines 1-51).

Regarding Claim 28, Finn discloses wherein when the first element is a first link (see FIG. 2, arc 36a-36b), the method further includes: identifying an initial node of the first link (see FIG. 2, Node 30i identifies and connects to an arc 36a; see col. 20, lines 14-45).

Regarding Claim 29, Finn discloses wherein routing the first segment automatically includes routing the first segment (see FIG. 2, arc 34a-b; or see FIG.

4A, arc 92a) from the source node (see FIG. 2, source node 30a) to the initial node of the first link when the first element is the first link (see FIG. 2, route to node 30i when arc 36a is the first arc; see col. 21, lines 4-40).

Regarding Claim 30, Finn discloses routing a second segment automatically (see FIG. 2, a second segment of arcs 36a, 36c, 36e, and 36h), and the first link (see FIG. 2, arc 36a,c, e and h now includes 36a in a second segment; see FIG. 3, step 66 and 68; see col. 21, lines 4-40).

Regarding Claim 31, a claim which that substantially discloses all the limitations of the respective method claim 23. Therefore, it is subjected to the same rejection.

Regarding Claim 32, a claim which that substantially discloses all the limitations of the respective method claim 24. Therefore, it is subjected to the same rejection.

Regarding Claim 33, a computer program product claim which that substantially discloses all the limitations of the respective method claim 21. Therefore, it is subjected to the same rejections.

Regarding Claim 35, a claim which that substantially discloses all the limitations of the respective method claim 23. Therefore, it is subjected to the same rejection.

Regarding Claim 36, a claim which that substantially discloses all the limitations of the respective method claim 24. Therefore, it is subjected to the same rejection.

Regarding Claim 37, a computer program product claim which that substantially discloses all the limitations of the respective method claim 25. Therefore, it is subjected to the same rejections.

Regarding Claim 38, a claim which that substantially discloses all the limitations of the respective claim 26. Therefore, it is subjected to the same rejection.

Regarding Claim 39, a claim which that substantially discloses all the limitations of the respective claim 28. Therefore, it is subjected to the same rejection.

Regarding Claim 40, a claim which that substantially discloses all the limitations of the respective claim 29. Therefore, it is subjected to the same rejection.

Regarding Claim 41, a claim which that substantially discloses all the limitations of the respective claim 30. Therefore, it is subjected to the same rejection.

Regarding Claim 42, Finn discloses wherein the computer-readable medium is one selected from the group consisting of a hard disk, a CD-ROM, a DVD, a computer disk, a tape drive, a computer memory and a data signal embodied in a carrier wave (see FIG. 1, Network Node 12a comprises a computer memory which stores the method to be executed; see col. 16, lines 36-47).

Response to Arguments

9. Applicant's arguments with respect to claims 1-21,23-33,35-42 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ian N. Moore whose telephone number is 571-272-3085. The examiner can normally be reached on M-F: 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau T. Nguyen can be reached on 571-272-3126. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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